

1010 PCT/PTO 14 MAR 2002

FORM PTO-1390 (REV. 11-2000)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER P/63010-PCT	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371				U.S. APPLICATION NO. (if known, see 37 CFR 1.5) 10/088365	
INTERNATIONAL APPLICATION NO. PCT/IB00/01366		INTERNATIONAL FILING DATE September 12, 2000		PRIORITY DATE CLAIMED September 14, 1999	
TITLE OF INVENTION BALUN					
APPLICANT(S) FOR DO/EO/US Hardial GILL					
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:					
1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. 3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371 (f)). The submission must include items (5), (6), (9) and (21) indicated below. 4. <input type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31). 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) a. <input checked="" type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau). b. <input type="checkbox"/> has been communicated by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). 6. <input type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)). a. <input type="checkbox"/> is attached hereto. b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4). 7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)). a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau). b. <input type="checkbox"/> have been communicated by the International Bureau. c. <input checked="" type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). 9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). 10. <input type="checkbox"/> An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). Items 11 to 20 below concern document(s) or information included: 11. <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 13. <input type="checkbox"/> A FIRST preliminary amendment. 14. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. 15. <input type="checkbox"/> A substitute specification. 16. <input type="checkbox"/> A change of power of attorney and/or address letter. 17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825. 18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4). 19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4). 20. <input checked="" type="checkbox"/> Other items or information: Receipt Acknowledgement Postcard					

U.S. APPLICATION NO. (if known, see 37 CFR 1.53) 10/088365		INTERNATIONAL APPLICATION NO. PCT/IB00/01366		ATTORNEY'S DOCKET NUMBER P/63010-PCT	
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21. <input checked="" type="checkbox"/> The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) : Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1,040.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$890.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$740.00 International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$710.00 International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00 ENTER APPROPRIATE BASIC FEE AMOUNT =				CALCULATIONS PTO USE ONLY	
				\$890.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).				\$0.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$	
Total claims	2 - 20 =	0	x \$18.00	\$0.00	
Independent claims	1 - 3 =	0	x \$84.00	\$0.00	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$280.00	\$0.00	
TOTAL OF ABOVE CALCULATIONS =				\$890.00	
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				\$0.00	
SUBTOTAL =				\$890.00	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$0.00	
TOTAL NATIONAL FEE =				\$890.00	
Fee for recording the enclosed assignment (37 CFR 1.21 (h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +				\$0.00	
TOTAL FEES ENCLOSED =				\$890.00	
				Amount to be refunded:	\$
				charged:	\$

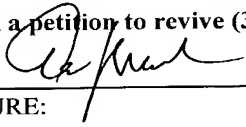
a. ☒ A check in the amount of **\$890.00** to cover the above fees is enclosed.

b. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any
 overpayment to Deposit Account No. 11-1145. A duplicate copy of this sheet is
 enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR
 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

KIRSCHSTEIN, OTTINGER, ISRAEL & SCHIFFMILLER, P.C.
 489 Fifth Avenue
 New York, New York 10017
 (212) 697-3750

SIGNATURE: 

Alan Israel
 NAME
27,564
 REGISTRATION NUMBER

*I hereby certify that this correspondence is being deposited with the U.S. Postal
 Service as Express Mail No. EL 337 911 958 US in an envelope addressed to:
 Box: PCT, Commissioner of Patents and Trademarks, Washington, D.C., 20231, on
 March 14, 2002*

(date)

Alan Israel

Reg. No. 27,564

Rec'd PCT/PTO 11 JUL 2002

Docket No.: P/63010

PATENTS

#4/a

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

I hereby certify that this correspondence is being deposited with the U S Postal Service as Express Mail No. EL 337 912 525 US in an envelope addressed to: Box: PCT, Commissioner of Patents and Trademarks, Washington, D C , 20231, on: July 11, 2002
(date) Alan Israel
Reg No 27,564

International Application No.: PCT/IB00/01366
International Filing Date : September 12, 2000
In re: Application of : Hardial GILL
Serial No. : 10/088,365
Deposited : March 14, 2002
For : BALUN

New York, New York
July 11, 2002

PRELIMINARY AMENDMENT

BOX: PCT
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

Prior to calculation of the filing fee and before examination, kindly amend the above captioned application as follows:

IN THE CLAIMS:

Please cancel claims 1-2, without prejudice.

Please add the new set of claims 3-4 set forth on the enclosed pages.

IN THE ABSTRACT:

Delete the "Abstract" on the PCT cover sheet and replace it with the "Abstract of the Disclosure" set forth on a separate sheet attached hereto.

REMARKS

An abstract has been provided on a separate sheet; and the claims have been amended to conform to U.S. practice.

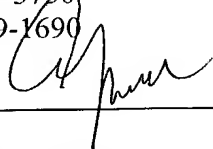
Accompanying this communication is a literal English translation of the above identified application, and the fee of \$130.00 as set forth under 37 C.F.R. §1.492(f). The undersigned attorney asks that the English translation be used as the copy for examination purposes as required under 37 C.F.R. §1.52.

If there are any additional charges, or any overpayment, in connection with the filing of this Communication, the Commissioner is hereby authorized to charge any such deficiency, or credit any such overpayment, to Deposit Account No. 11-1145.

Wherefore, an early action on the merits is earnestly solicited.

Respectfully submitted,

KIRSCHSTEIN, OTTINGER, ISRAEL & SCHIFFMILLER, P.C.
Attorneys for Applicant(s)
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Alan Israel
Registration No. 27,564

ABSTRACT OF THE DISCLOSURE

A balun, which takes up very little space and which is economical to produce, consists of four interconnected planar lines. One end of a first line is configured as a first symmetrical terminal. The other end of the first line is connected to the adjacent end of the second adjacent line. The end of the second line that is connected to the first line forms an unsymmetrical terminal, while the other end of the second line is connected to ground. The end of the third line, which is adjacent to the second line, is connected to ground, this end being adjacent to the unsymmetrical terminal. The other end of the third line serves as a second symmetrical terminal. The end of the fourth line that is adjacent to the second symmetrical terminal is connected to ground, the other end being connected to the end of the second line that forms the unsymmetrical terminal.

NEW CLAIMS

3. A balun, comprising: four coupled planar lines running next to each other; one end of a first of the lines serving as a first balanced connection gate; the other end of the first line being connected to one end of a second of the lines adjacent to the other end of the first line; the one end of the second line being connected to the first line and serving as an unbalanced connection gate; the other end of the second line being connected to ground; one end of a third of the lines lying next to the unbalanced connection gate and being connected to ground; the other end of the third line serving as a second balanced connection gate; one end of a fourth of the lines lying next to the second balanced connection gate and being connected to ground; and the other end of the fourth line being connected to the one end of the second line forming the unbalanced connection gate.

4. The balun according to claim 3, wherein the four lines have a coupling length which corresponds to roughly one-quarter of an average operating wavelength of the balun.

Balun

Prior art

The present invention concerns a balun, consisting of four coupled planar lines running next to each other, with an unbalanced connection gate and two balanced connection gates.

Baluns are known to be transitions between balanced and unbalanced transmission lines. A balanced line exists when a signal being transmitted over it does not have ground as reference potential. On the other hand, an unbalanced transmission line is connected on one side to ground, so that a signal being transmitted over it has ground as reference potential. Baluns of this type are used, for example, at the inputs and outputs of quadruplex mixers or amplifiers or modulators, etc.

The balun just mentioned, consisting of four planar lines connected to each other, is known from DE 197 29 761 A1. This balun consists of two 3 dB couplers, each of which consist of two planar lines coupled over a length of $\lambda/4$. Each of the two couplers is designed in the form of a two-pole band pass filter, in which one is configured in an open circuit configuration and the other in a short circuit configuration. The two quarter-wavelength couplers are connected to each other so that a three-gate balun is produced, having one connection for unbalanced signals and two connections for balanced signals. The opposite ends of the two lines in the line coupler in the open circuit configuration are at no-load. Another end of the two lines serves as balanced connection. The opposite end of the other line is connected to one end of one of the two line couplers designed in the short circuit configuration. Two opposite ends of the two lines are contacted with ground from this line coupler, and another end of a line forms an additional connection for balanced signals. The two line ends of the two line couplers connected to each other form the connection gate for unbalanced signals. In order to achieve a narrow 3 dB coupling between the lines, the balun is designed in multilayer technology. The manufacturing cost is therefore high, which is unfavorable for mass production.

Task and Solution of the Invention

The underlying task of the invention is to provide a space-saving balun that is as simple as possible to manufacture.

This type of balun is constructed as follows according to the features of Claim 1. One end of a first of four lines serves as a first balanced connection gate. The other end of this first line is connected to the end of the second line adjacent to it. The end of the second line connected to the first line forms the unbalanced connection gate, and the other end of the second line lies at ground potential. The end of the third line lying next to the unbalanced connection gate adjacent to the second line is contacted with ground, and the other end of the third line serves as second balanced connection gate. The end of the fourth line lying next to the second balanced connection gate adjacent to the third line is contacted with ground, and the other end of the fourth line is connected to the end of the second line forming the unbalanced connection gate.

According to a subclaim, the coupling length of the four lines corresponds to roughly one-fourth the average operating wavelength of the balun.

Description of a Practical Example

The invention is further explained below with reference to a practical example depicted in the drawing:

The balun depicted in the drawing consists of four planar lines 1, 2, 3 and 4 running next to each other. The line length, over which the lines 1, 2, 3 and 4 are coupled to each other, amounts to about one-fourth of the average operating wavelength of the balun.

One end of the first line 1 is designed as connection gate 5 for the balanced signal. The other end of the first line 1 is connected conducting to the end of the second line 2 adjacent to it via an air bridge 6. The same end of the second line 2 is designed as connection gate 7 for unbalanced signals. The end of the second line 2 opposite this connection gate 7 is contacted with ground 8. The short-circuit to ground is accomplished in known fashion by means of contacting in the

substrate carrying the planar lines 1, 2, 3, 4 to a ground surface applied to the bottom of the substrate.

The end of the third line 3, adjacent to the ground short-circuit 8 of the second line 2 from the third line 3 running next to the second line 2, is designed as a second balanced connection gate 9. The end of the third line 3 opposite this connection gate 9 is provided with a ground connection 10.

The end of the fourth line 4 adjacent to the connection gate 9 of the third line 3 is also provided with a ground contact 11. The end of the fourth line 4 opposite this ground contact 11 is connected to the end of the second line 2 via an air gap 12, which is designed as an unbalanced connection gate 7.

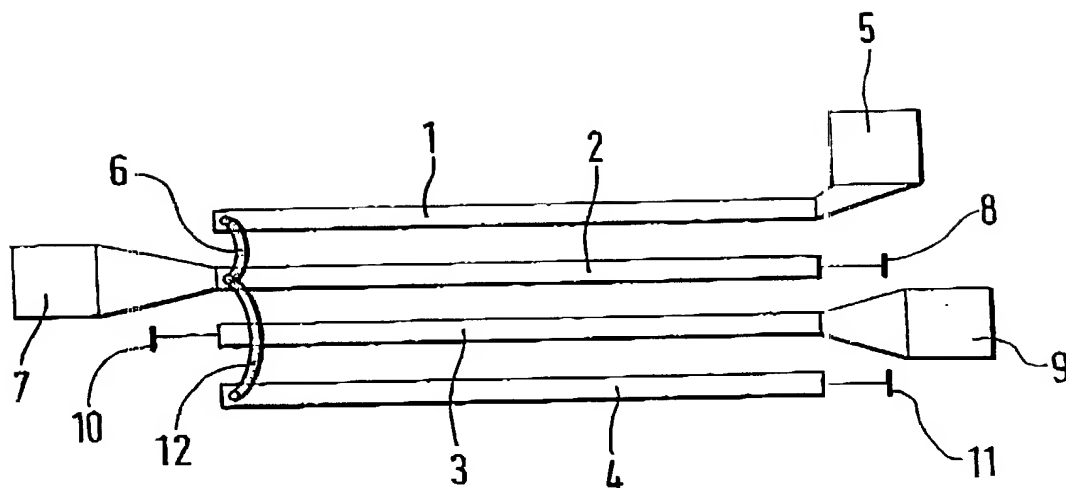
Deviating from the practical example depicted in the drawing, the two ends of lines 2 and 4 lying at ground potential can be contacted with each other via an air gap. One of the two contacts 8, 11 can then be saved for the ground line.

Claims

1. Balun, consisting of four coupled planar lines (1, 2, 3, 4) running next to each other, with an unbalanced connection gate (7) and two balanced connection gates (5, 9), characterized by the fact

- that one end of a first one of the four lines serves as a first balanced connection gate (5),
- that the other end of this first line (1) is connected to the end of the second line (2) adjacent to it,
- that this end of the second line (2) connected to the first line (1) forms the unbalanced connection gate (7) and the other end of the second line (2) lies at ground potential (8),
- that, from the third line (3) adjacent to the second line (2), the end lying next to the unbalanced connection gate (7) lies at ground potential (10) and the other end serves as second balanced connection gate (9),
- and that the end of the fourth line (4) adjacent to the third line (3), lying next to the second balanced connection gate (9) lies at ground potential (11) and the other end is connected to the end of the second line (2) forming the unbalanced connection gate (7).

2. Balun according to Claim 1, characterized by the fact that the coupling length of the four lines (1, 2, 3, 4) corresponds to roughly one-quarter of the average operating wavelength of the balun.



(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES
PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum
Internationales Büro



(43) Internationales Veröffentlichungsdatum
22. März 2001 (22.03.2001)

PCT

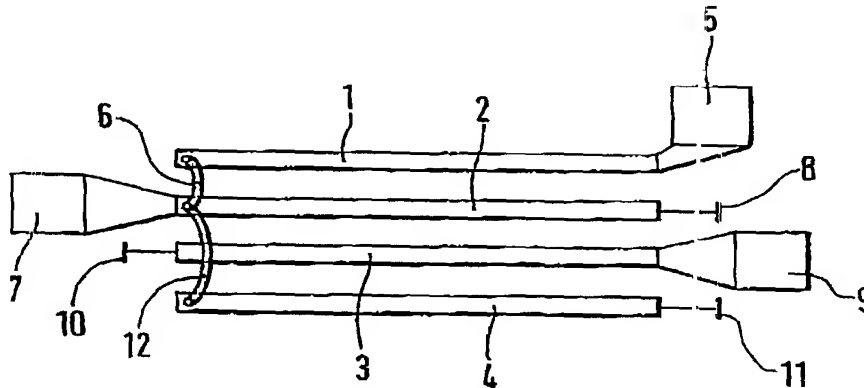
(10) Internationale Veröffentlichungsnummer
WO 01/20708 A1

- (51) Internationale Patentklassifikation: **H01P 5/10** (71) Anmelder (für alle Bestimmungsstaaten mit Ausnahme von US): **MARCONI COMMUNICATIONS GMBH** [DE/DE]; Gerberstrasse 33, D-71522 Backnang (DE)
- (21) Internationales Aktenzeichen: **PCT/IB00/01366** (72) Erfinder; und (75) Erfinder/Anmelder (nur für US): **GILL, Hardial** [GB/DE]; Elly-Heuss-Knapp-Weg 38/3, 71522 Backnang (DE).
- (22) Internationales Anmeldedatum: 12. September 2000 (12.09.2000)
- (25) Einreichungssprache: **Deutsch** (74) Anwalt: **CAMP, Ronald**; Marconi Intellectual Property, Waterhouse Lane, Chelmsford, Essex CM1 2QX (GB)
- (26) Veröffentlichungssprache: **Deutsch**
- (30) Angaben zur Priorität: 199 43 955.9 14. September 1999 (14.09.1999) **DE** (81) Bestimmungsstaaten (national): **AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU,**

[Fortsetzung auf der nächsten Seite]

(54) Title: **BALUN**

(54) Bezeichnung: **SYMMETRIERGLIED**



(57) Abstract: The invention relates to a balun which takes up very little space and which is economical to produce. Said balun consists of four interconnected planar lines (1, 2, 3, 4). One end of a first line (1) is configured as a first symmetrical terminal (5). The other end of said first line (1) is connected to the adjacent end of the second adjacent line (2). The end of the second line (2) that is connected to the first line (1) forms an unsymmetrical terminal (7), while the other end of the second line (2) is connected to earth (8). The end of the third line (3), which is adjacent to the second line (2), is connected to earth (10), said end being adjacent to the unsymmetrical terminal (7). The other end of said third line serves as a second symmetrical terminal (9). The end of the fourth line (4) that is adjacent to the second symmetrical terminal (9) is connected to earth (11), the other end being connected to the end of the second line (2) that forms the unsymmetrical terminal (7).

(57) Zusammenfassung: Ein sehr platzsparendes und mit geringem Aufwand herstellbares Symmetrierglied besteht aus vier miteinander gekoppelten planaren Leitungen (1, 2, 3, 4). Dabei ist ein Ende einer ersten Leitung (1) als erstes symmetrisches Anschlussstor (5) ausgebildet. Das andere Ende dieser ersten Leitung (1) ist mit dem danebenliegenden Ende der zweiten benachbarten Leitung (2) verbunden. Das mit der ersten Leitung (1) verbundene Ende der zweiten Leitung (2) bildet ein unsymmetrisches Anschlussstor (7), und das andere Ende der zweiten Leitung (2) ist mit Masse (8) kontaktiert. Von der der zweiten Leitung (2) benachbarten dritten Leitung (3) ist das neben dem unsymmetrischen Anschlussstor

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CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

Veröffentlicht:

- Mit internationalem Recherchebericht
- Vor Ablauf der für Änderungen der Ansprüche geltenden Frist: Veröffentlichung wird wiederholt, falls Änderungen einreffen

(84) **Bestimmungsstaaten (regional):** ARIPO-Patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), eurasisches Patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), europäisches Patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI-Patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Zur Erklärung der Zweibuchstaben-Codes, und der anderen Abkürzungen wird auf die Erklärungen ("Guidance Notes on Codes and Abbreviations") am Anfang jeder regulären Ausgabe der PCT-Gazette verwiesen

(7) liegende Ende mit Masse (10) kontaktiert, und das andere Ende dient als zweites symmetrisches Anschlussstor (9). Von der vierten Leitung (4) ist das neben dem zweiten symmetrischen Anschlussstor (9) liegende Ende mit Masse (11) kontaktiert, und das andere Ende ist mit dem das unsymmetrisch Anschlusstor (7) bildenden Ende der zweiten Leitung (2) verbunden.

Type a plus sign (+) inside this box → ☐

Approved for use through 9/30/98 PTO/SB/01 (6-95)
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE OMB 0651-0032

0010/PTO
Rev. 8/95

U.S. Department of Commerce
Patent and Trademark Office

DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION

☐ Declaration Submitted with Initial Filing OR ☒ Declaration Submitted after Initial Filing

Attorney Docket Number P/63010

First Named Inventor GILL, Hardial

COMPLETE IF KNOWN

Application Number 10/088,365

Filing Date March 14, 2002

Group Art Unit

Examiner Name

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

BALUN

(Title of the invention)

the specification of which

☐ is attached hereto
OR

☒ was filed on (MM/DD/YYYY)

March 14, 2002

as United States Application Number or PCT International

Application Number

10/088,365

and was amended on (MM/DD/YYYY)

(if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37 Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code §119 (a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365 (a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?	
				YES	NO
19943955.9	Germany	September 14 1999	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
<u>PCT/IB00/01366</u>	<u>INTERNATIONAL</u>	<u>Sept. 12, 2000</u>			

☐ Additional foreign application numbers are listed on a supplemental priority sheet attached hereto.

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)	<input type="checkbox"/> Additional provisional application numbers are listed on a supplemental priority sheet attached hereto.

Burden Hour Statement: This form is estimated to take .4 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Type a plus sign (+) inside this box → +

DECLARATION

Page 2

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s), or §365(c) of any PCT International application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations §1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

U.S. Parent Application Number	PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number (if applicable)

☐ Additional U.S. or PCT International application numbers are listed on a supplemental priority sheet attached hereto.

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

☐ Firm Name Customer or label
OR
☒ List attorney(s) and/or agent(s) name and registration number below:

Name	Registration Number	Name	Registration Number
David B. Kirschstein, Esq.	17,244		
Alan Israel, Esq.	27,564		
Martin W. Schiffmiller, Esq.	30,421		

☐ Additional attorney(s) and/or agent(s) named on a supplemental sheet attached hereto.

Please direct all correspondence to: ☐ Customer or label Number OR ☒ Fill in correspondence address below

Name	<u>KIRSCHSTEIN, OTTINGER, ISRAEL & SCHIFFMILLER, P.C.</u>		
Address	<u>489 Fifth Avenue</u>		
Address			
City	<u>New York</u>	State	<u>New York</u>
Country	<u>United States</u>	Telephone	<u>(212) 697-3750</u>
		Fax	<u>(212) 949-1690</u>

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor: ☐ A petition has been filed for this unsigned inventor

Given Name	<u>Hardial</u>	Middle Initial		Family Name	<u>GILL</u>	Suffix e.g. Jr.	
Inventor's Signature	<u>X Hardial Ail Gill</u>					Date	<u>3 APRIL 2002</u>
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				Applicant Authority			

☐ Additional inventors are being named on supplemental sheet(s) attached hereto